THE UNIVERSITY OF TEXAS AT EL PASO

An initiative to increase research and education in sustainability engineering

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Investigators: Taboada, H. A.; Espiritu, J. F.; Gomez, C.; Vargas, N.

"There is a need for a better understanding about how complex industrial systems can achieve both short-term continuity and long-term ecological integrity. Sustainable development is a critical challenge for our generation. As we move to a more carbon-constrained world, businesses will ultimately have to meet customer needs in a way that generates fewer carbon emissions. Therefore, it is essential to bridge engineering education to current research in sustainability to prepare future generations of professionals in the application and research like sustainable design, product life cycle analysis, and carbon footprint management, cutting-edge techniques in the growing field of Sustainability Engineering"

USDA/NIFA PRIORITY NEED AREAS

- To strengthen institutional educational capacities through curricula design and materials development
- To attract and support undergraduate and graduate students from underrepresented groups in order to prepare them for careers related to the food, agricultural and natural resource systems

OBJECTIVES

- Develop new undergraduate and graduate curricula in sustainability engineering
- Attract, retain and graduate outstanding Hispanic students interested in sustainability engineering related areas
- Provide mentorship to the 15 funded undergraduate students each year to boost their USDA/natural resource-related employment opportunities
- Provide financial support to participating undergraduate and graduate students over 3 years
- Engage students in professional research
- Improve students' technical communication skills
- Provide more education and environmental awareness about sustainability issues and increase the environmental awareness in the El Paso/Juarez community

BENEFICIARIES

- UTEP College of Engineering
- UTEP undergraduate and graduate students
- El Paso area Middle and High school students
- El Paso/Juarez Community

ACTIVITIES

Courses

- Introduction to sustainability engineering (undergraduate)
- Sustainability engineering (graduate)
- Project Based Learning
- Hands-on Activities
- Use of Software
- Local Community Problems
- Industry Cases

Outreach at Parkland High School

Research

- Mini-research projects will provide research experiences for undergraduate students
- Graduate students will develop state-of-the-art research in the area of sustainability engineering

Outreach

- To High School teachers through the U-Teach Miners project
- To Middle and High school students participating in the UTEP summer program
- To High school students at local High schools
- Sustainability engineering conference at UTEP

EVALUATION

Three types of Evaluations are to be performed during the present project

- Formative evaluations to provide continuous feedback on whether objectives are being met
- Summative evaluations to measure how effectively the program has accomplished its stated goals
- Performance measures to assess student retention

EXPECTED IMPACT

The project will impact

- At least 45 undergraduate students
- At least 6 graduate students will receive full support to complete graduate studies
- At least 30 High school students in UTEP's summer research program
- At least 50 High school teachers through talks about sustainability engineering
- Around 450 High school students